Applicants: Hans Krueger, et al.

Serial No.: 10/523,875

Attorney's Docket No.: 14219-076US1

Client's Ref.: P2002,0686USN

Filed : February 7, 2005 Page : 2

AMENDMENTS TO THE CLAIMS:

This listing of claims replaces all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Cancelled)

 (Currently Amended) The component of claim 5 or 6 [[1]], wherein the electrically conductive connections comprise bumps.

3 and 4. (Cancelled)

5. (Currently Amended) A component comprising:

a chip having a top surface and having a bottom surface that includes electrically conductive structures;

a carrier substrate having a top surface that includes connecting areas, the chip being mounted in a flip chip arrangement on the carrier substrate via electrically conductive connections between the electrically conductive structures and the connecting areas;

a support element at the top surface of the carrier substrate, the support element surrounding the chip but not touching the chip; and

a seal that borders the chip and the support element;

Applicants: Hans Krueger, et al. Attorney's Docket No.: 14219-076US1 Serial No.: 10/523.875 Client's Ref.: P2002.0686USN

Filed: February 7, 2005 Page

wherein the support element supports the seal;

wherein the support element and the seal are configured to reduce an affect of mechanical forces on the electrically conductive connections that results from temperature variations;

The component of claim 1, wherein the seal comprises[[:]] a composite comprising a dielectric layer and a metal layer, the composite forming a seal to the carrier substrate outside of an area that corresponds to the chip; and

wherein the chip has a thickness such that a force resulting from thermal expansion of an electrically conductive connection in a temperature range between -60° C and 85° C is a maximum of 2 Newtons.

6. (Currently Amended) A component comprising:

a chip having a top surface and having a bottom surface that includes electrically conductive structures;

a carrier substrate having a top surface that includes connecting areas, the chip being mounted in a flip chip arrangement on the carrier substrate via electrically conductive connections between the electrically conductive structures and the connecting areas;

a support element at the top surface of the carrier substrate, the support element surrounding the chip but not touching the chip; and

a seal that borders the chip and the support element;

wherein the support element supports the seal;

Applicants : Hans Krueger, et al.

Serial No.: 10/523,875 Filed: February 7, 2005

Filed : February 7
Page : 4

wherein the support element and the seal are configured to reduce an affect of

Attorney's Docket No.: 14219-076US1

Client's Ref.: P2002,0686USN

mechanical forces on the electrically conductive connections that results from temperature

variations;

The component of claim 1, wherein the seal comprises[[:]] a composite comprising

a dielectric layer and a metal layer above the dielectric layer relative to the top surface of

the chip, the composite forming a seal to the carrier substrate outside of an area that

corresponds to the chip; and

wherein the dielectric layer has a modulus of elasticity of less than 1 Gpa, a

thickness of less than 20 μ m, or a coefficient of thermal expansion that is greater than

 $\alpha_{bump}/2$ and that is less than 2 α_{bump} , where α_{bump} is a coefficient of thermal expansion for at

least one of the electrically conductive connections.

7. (Currently Amended) The component of claim 5 or 6 4, wherein the support

element comprises a shrink frame that substantially encloses the chip.

8. (Currently Amended) The component of claim 7, further comprising a metal

layer that substantially covers the top surface of the chip; wherein the shrink frame forms a

seal to the carrier substrate.

9. (Currently Amended) The component of claim 5 or 6 1, 5, 6, or 7, wherein the

chip has side surfaces that are sloped so that a cross-section of the chip tapers toward the

carrier substrate.

Applicants: Hans Krueger, et al. Attorney's Docket No.: 14219-076US1 Serial No.: 10/523,875 Client's Ref.: P2002,0686USN

Filed : February 7, 2005 Page : 5

10. (Currently Amended) The component of claim 5 or 6 1, 5, 6, or 7, wherein the chip has side surfaces that comprise at least one step.

11. (Currently Amended) The component of claim 5 or 6 [[1]], wherein the seal covers edge areas of the chip and the support element; and

wherein the seal does not cover the top surface of the chip.

- 12. (Currently Amended) The component of claim 5 or 6 [[1]], further comprising a wherein the metal layer is over above the seal relative to the top surface of the chip, the metal layer being on edge areas of the support element and/or on edge areas of the carrier substrate.
- 13. (Currently Amended) The component of claim 5 or 6 [[3]], wherein the dielectric layer completely covers the chip and the support element, the dielectric layer forming a seal to the carrier substrate only in areas that do not correspond to the support element so that the chip and the support element are in a shared space that is formed between the dielectric layer and the top surface of the carrier substrate.
- 14. (Currently Amended) The component of claim 5 or 6 [[3]], wherein the dielectric layer completely covers the top surface of the chip and seals to the support element, the support element comprising a hermetically tight material.

Applicants: Hans Krueger, et al. Attorney's Docket No.: 14219-076US1 Serial No.: 10/523.875 Client's Ref.: P2002.0686USN

Filed : February 7, 2005 Page : 6

15. (Cancelled)

16. (Currently Amended) The component of claim 5 or 6 [[3]], further comprising

a filling compound on the dielectric layer.

17. (Currently Amended) The component of claim 16, further comprising a

wherein the metal layer that forms a seal with the support element outside of an area that

corresponds to the chip, or that forms a seal with to the carrier substrate outside of an area

that corresponds to the support element.

18. (Currently Amended) The component of claim 5 or 6 1 or 7, further

comprising a contact metallization on side surfaces of the chip that face the carrier

substrate:

wherein the support element comprises a solder frame, the support element being

soldered to a contact metallization of the chip.

19. (Currently Amended) The component of claim 5 or 6 18, further comprising a

metal layer above on a top surface of the chip.

20 and 21. (Cancelled)

Applicants: Hans Krueger, et al. Attorney's Docket No.: 14219-076US1 Serial No.: 10/523,875 Client's Ref.: P2002,0686USN

Filed: February 7, 2005

Page

22. (Currently Amended) The component of claim 5 or 6 [[3]], wherein the

dielectric layer comprises at least one of a plastic, an organic plastic, a laminate film, a

glass solder and a resin.

23. (Currently Amended) The component of claim 5 or 6 [[1]], wherein the

support element comprises at least one of metal, a ceramic material and plastic.

24. (Currently Amended) The component of claim 5 or 6 [[1]], wherein the

support element corresponds to a boundary of an indentation on the carrier substrate.

25. (Currently Amended) The component of claim 5 or 6 [[1]], wherein a height

of the support element does not exceed a distance between the top surface of the carrier

substrate and a bottom edge of the chip; and

wherein an the inner edge of the support element is under the bottom edge of the

chip.

26. (Currently Amended) The component of claim 5 or 6 [[1]], wherein a height

of the support element corresponds to, or exceeds, a distance between the top surface of the

carrier substrate and a bottom edge of the chip.

27. (Currently Amended) The component of claim 5 or 6 1, 5, 6, or 7, wherein the

carrier substrate comprises a low temperature cofired ceramic.

Applicants: Hans Krueger, et al. Attorney's Docket No.: 14219-076US1 Serial No.: 10/523,875 Client's Ref.: P2002,0686USN

Filed : February 7, 2005 Page : 8

28. (Currently Amended) The component of claim 5 or 6 1, 5, 6, or 7, further comprising surface-mounted-device-capable external contacts on a bottom surface of the carrier substrate.

- 29. (Currently Amended) The component of claim 5 or 6 1, 5, 6, or 7, wherein the carrier substrate comprises at least two dielectric layers.
- 30. (Currently Amended) The component of claim 5 or 6 1, 5, 6, or 7, wherein the chip comprises at least one surface acoustic wave resonator or at least one bulk acoustic wave resonator that works with acoustic surface waves or acoustic volume waves.
- 31. (Previously Presented) The component of claim 5 or 6 1, 5, 6, or 7, further comprising similar or different one or more additional chips that are attached to the carrier substrate and that are similarly encapsulated using at least one support element and seal.

32 to 39. (Cancelled)